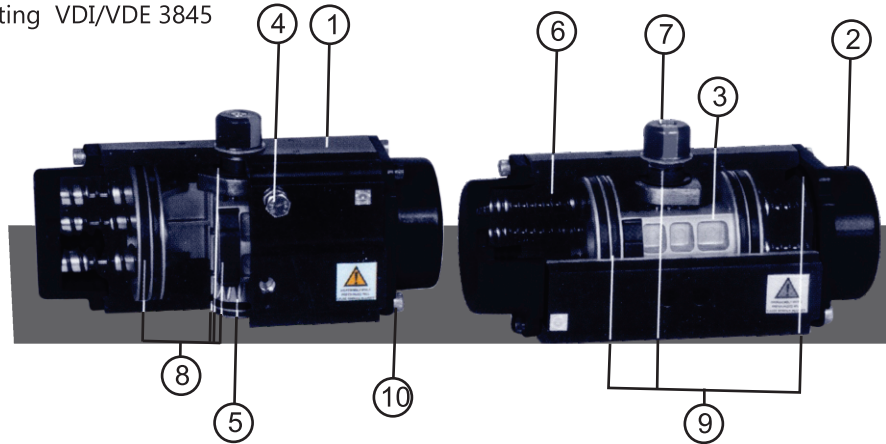


ROTARY ACTUATOR



ROTARY ACTUATOR

DESIGN - Dual rack and pinion design with extra wide base manufactured in full compliance with the latest requirement of ISO 5211 with provision for mounting with flameproof & Weatherproof Solenoid Valves, Limit Switches & Accessories comply to NAMUR mounting VDI/VDE 3845



FEATURES

1 Actuator Body

Extruded Aluminium Alloy body is hard anodized to protect the internal and external components against corrosion, Special Honed Internal Surface reduces the friction on moving pistons and extends the life cycle of the actuators alternative coatings are available such as ENP (Electroless Nickel Plating), Fiber Powder Coated, PFA, ECTFE for more aggressive environments.

2 End Caps

Diecasted aluminum end caps are primarily alodine Chromatized coated which provides longer life cycles against corrosion and reduces wearing resistance. Secondary standard coating is powder polyester coating and also ENP PFA, ECTFE etc coatings are offered alternatively for aggressive environments.

3 Pistons

Diecasted aluminum twin rack pistons are equipped with slide guides and seals in high engineered plastic. Alodine Chromatized coated pistons ensure longer life cycles against corrosion and wearing resistance, Pistons that are identical on both sides allow reverse rotation simply by inverting the pistons.

4 Travel Adjustment

Bi-directional external travel stop adjustment bolts can adjust the position +- 50 between 850 to 950 at both opening and closing directions for accurate valve assignment. 0-900 full scale limit position adjustment can also be offered optionally,

5 Pinion (Drive Shaft)

Anti Blow Out proof alloy steel pinion is electroless nickel plated in order to reduce the friction provide maximum wear resistance and protection against corrosion under severe conditions as it fully conforms to the latest standards of ISO 521 II, DIN3ES37, NAMUR. Double square, parapet or diagonal square or key way type shaft can be

supplied in accordance with customer demands.

6 Preloaded Springs

Modular Pre Loaded Spring Cartridge design in high grade coated steel springs provide great safety and corrosion resistance in fail safe and emergency shut down operations. Also these springs can be used for both high & Low Temperature applications.

7 Position Indicator

All actuators are equipped with regular position indicator showing the current state of the actuators and valves. Top of actuators has a NAMUR slot to engage with all popular sensors and positioners.

8 Bearings

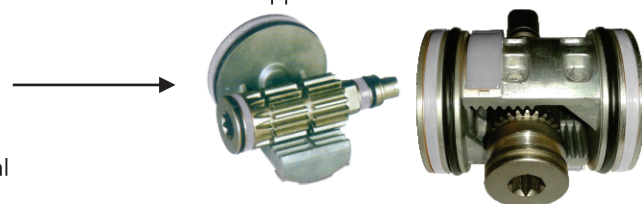
Low friction Bearing & guides provide high life cycle to ensure trouble free operations and stability during operation of aerators.

9 Seals

NBR rubber O-rings provide trouble free operation at standard temperature ranges between -20 OC, to +80 QC temperature ranges. For high and low temperature applications Viton (-20 OC - + 150 OC) and Silicone (-50 OC - + 1% OC) seals are available optionally

10 Fasteners

Stainless steel fasteners for long life corrosion resistant application.



Double - Acting Actuators Torque Output

Actuator Size	Air Supply Pressure (Bar)										
	2.5	3	3.5	4	4.2	4.5	5	5.5	6	7	8
055	12	14	17	19	12	22	25	27	30	35	40
065	20	24	28	32	34	36	41	45	49	57	65
075	31	37	44	49	51	55	62	68	74	87	99
085	45	53	62	72	75	81	90	98	107	126	144
100	69	83	97	110	116	124	139	153	167	195	221
115	114	137	161	184	193	205	229	252	275	322	369
125	149	179	208	238	250	268	299	329	359	420	481
150	257	310	362	415	436	467	515	567	620	725	830
175	385	463	536	613	645	691	769	847	925	1081	1237
200	584	703	821	940	940	1059	1177	1296	1415	1653	1890
250	UNDER DEVELOPEMENT										

Actuator Data

Model	Min / Max Air Supply Pressure	Rotation Angle	Operating Temp.	Cylinder Volumes (Cm ³)			Weight (Kg)	
				Cylinder Diameter	Opening	Closing	Double Acting	Single Spring
055	Dry or lubricant clean compressed Air 2.5 to 8 Bar	90° ± 5° or the whole trip 0° to 90°	NBR +20°C to +80°C Viton -20°C to +150°C & Silicone -35°C to +80°C	55	145	145	1.55	0.017
065				65	260	320	2.3	0.031
075				75	360	560	2.9	0.049
085				85	535	840	4.2	0.075
100				100	840	1220	5.6	0.107
115				115	1350	1955	9.2	0.154
125				125	1700	2700	11.5	0.233
150				150	2900	4465	22.0	0.374
175				175	4350	6800	29.0	0.559
200				200	6900	11000	48.0	1.008
250	UNDER DEVELOPEMENT							

Note : For Actuator spring return weight please multiply number of spring selected from table with single spring weight and odd double acting actuator weight

ACTUATOR SELECTION

While selecting Actuator add adequate safe value to the defined Valve torque, for example Lubricants (Oil, Grease ETC) 20%, Clear Liquid, Dry Gas & Wet Gas 40% Soft Slurry & Dry Steam 60%, Abrasive Slurry 100%,
(The above are approx safe recommended values)

Selection of Single Acting actuator

When controlling a Butterfly Valve with Torque of 240 Nm, Air supply pressure of 4 Bar; process media non lubricating dry steam, considering safety factor 60% value i.e ValveTorque shall be considered as 384 Nm, Select Torque Value in a Single Acting Torque output table for the nearest Spring Torque of 384 Nm. i.e. 514 Nm for start Torque and 351 Nm for end torque and then select the Air output torque, nearest to 384Nm for Air supply of 4 Ban which is 550 Nm for Start & 374 Nm for End. From the output Table the corresponding Actuator Size is 200 wkh 8 Nos. of Springs.

Selection of Double Acting Actuator

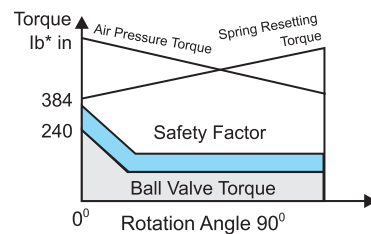
When controlling a Ball Valve with Torque requirement of 370Nm, Air supply pressure of 4 Bar process media of Non Lubricating dry steam considering safety Factor of 60% i.e. Valve Torque shall be considered as 592Nm, select air supply pressure of 4 Bar in the Double acting output torque table, and then search for equal or approximate Torque data in vertical line and select 6 I 3Nm band then search leftward in the line and Model DA I 75 .

Spring Components

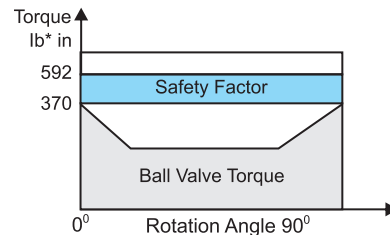


Spring Quantity	Spring Installation Mode	Spring Quantity	Spring Installation Mode
5		9	
6		10	
7		11	
8		12	

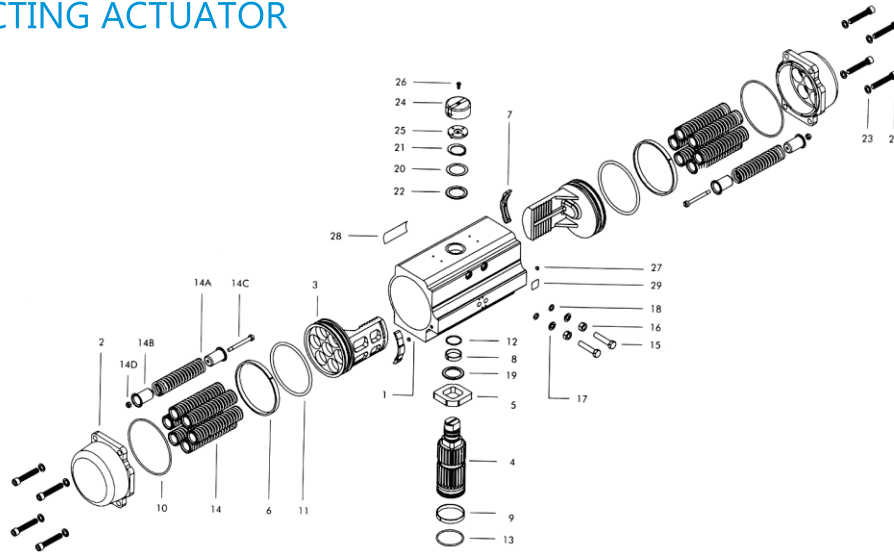
Actuator Model FRS 200 with 8 Springs



Actuator Model 175



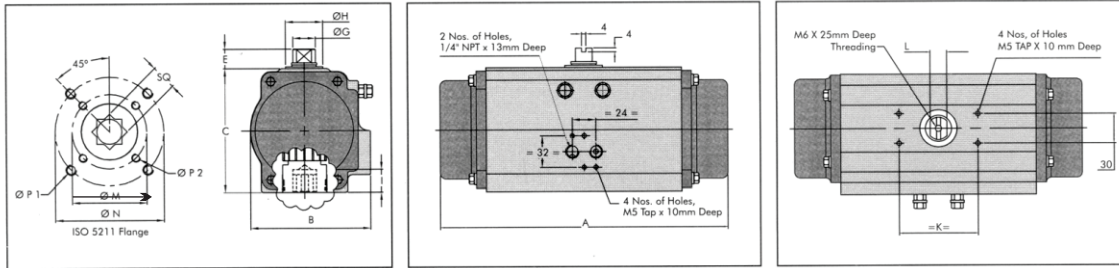
EXPLODED VIEW WITH BILL OF MATERIAL FOR SINGLE ACTING ACTUATOR



SR. No.	PART NAME	PART REF N	STANDARD MATERIAL	TOTAL QUANTITY
1	BODY	1	EXTRUDED ALUMINIUM ALLOY	1
2	END CAP	2	ALUMINIUM	2
3	RACK PISTON	3	ALUMINIUM	2
4	PINION	4	CARBON STEEL	1
5	PINION CAM	5	STAINLESS STEEL	1
6	PISTON GUIDE	6	ENGINEERING PLASTIC	2
7	PISTON PAD	7	ENGINEERING PLASTIC	2
8	O GUIDE FOR PINION	8	ENGINEERING PLASTIC	1
9	BOTTOM GUIDE FOR PINION	9	ENGINEERING PLASTIC	1
10	'O' RING FOR END CAP	10	NBR	2
11	'O' RING FOR PISTON	11	NBR	2
12	'O' RING FOR PINION TOP	12	NBR	1
13	'O' RING FOR PINION BOTTOM	13	NBR	1
14	SPRING ASSEMBLY	14		05-Dec
14A	SPRING	14A	I : D	05-Dec
14B	RETAINER FOR SPRING	14B	MS ZINC PLATING	Oct-24
14C	STUD FOR RETAINER	14C	STAINLESS STEEL	05-Dec
14D	NYLOCK NUT	14D	STAINLESS STEEL - NYLON	05-Dec
15	HEX BOLT FOR STROKE ADJUSTING	15	STAINLESS STEEL	2
16	NUT FOR STROKE ADJUSTING	16	STAINLESS STEEL	2
17	FLAT WASHER FOR STROKE ADJUSTING	17	STAINLESS STEEL	2
18	'O' RING FOR STROKE ADJUSTING	18	NBR	2
19	WASHER FOR PINION	19	ENGINEERING PLASTIC	2
20	PINION WASHER	20	STAINLESS STEEL	1
21	CIRCLIP	21	SPRING STEEL	1
22	ALLEN CAP BOLT FOR END CAP	22	STAINLESS STEEL	8
23	SPRING WASHER	23	STAINLESS STEEL	8
24	INDICATOR	24	ENGINEER PLASTIC	1
25	INDICATOR GUIDE	25	ENGINEERING PLASTIC	1
26	INDICATOR COUNTER BOLT	26	STAINLESS STEEL	1
27	VENT PLUG	27	NBR	2
28	NAME PLATE	28	STICKER	1
29	CAUTION LOGO	29	DO ME STICKER	1

* Recommended as spare kit * Recommended as service kit

DIMENSIONS



SR. NO.	SIZE	A	B	C	E	F	ØG	ØH	I	K	L	ØM	ØN	P1	P2	SQ
1	55	169	73	76	20	14	15	23	18	80	12	50	70	M8 X 12	M6 X 9	11x11
2	65	216	84.5	87.8	20	14	18	29	18	80	14	50	70	M8 X 15	M6 X 12	14x14
3	75	232	93.5	98	20	14	18	30	18	80	14	50	70	M8 X 15	M6 X 15	17x17
4	85	271	105.5	108.7	20	14	21	34	18	80	17	50	70	M8 X 15	M6 X 15	17x17
5	100	293	122	125.7	20	15	23	38	23	80	17	70	102	M10 X 20	M8 X 15	22x22
6	115	346	139.5	140.5	20	20	30	47	23	80	20	70	102	M10 X 20	M8 X 15	22x22
7	125	405	149	152.5	20	20	30	47	30	80	20	102	125	M12 X 25	M10 X 20	22x22
8	150	475	183	186.5	20	20	38	55	30	130	30	102	125	M12 X 25	M10 X 20	27x27
9	175	521	210	215	30	18	43	62	30	130	32	102	125	M12 X 25	M10 X 20	27x27
10	200	641	237.5	248	30	19	50	72	45	130	36	125	164	M18 X 35	M12 X 25	36x36

OPTIONAL ACCESSORIES



Gearbox : Available with clutch for manual operation of valve in case of power failure



Valve : Flow Control Valve
Quick Exhaust valve



Limit Switches : Limit Switches can be provided directly on the actuator. These Limit Switches are of general purpose specifications or flameproof as per IS 2148 1981 for Group II A and IIB.



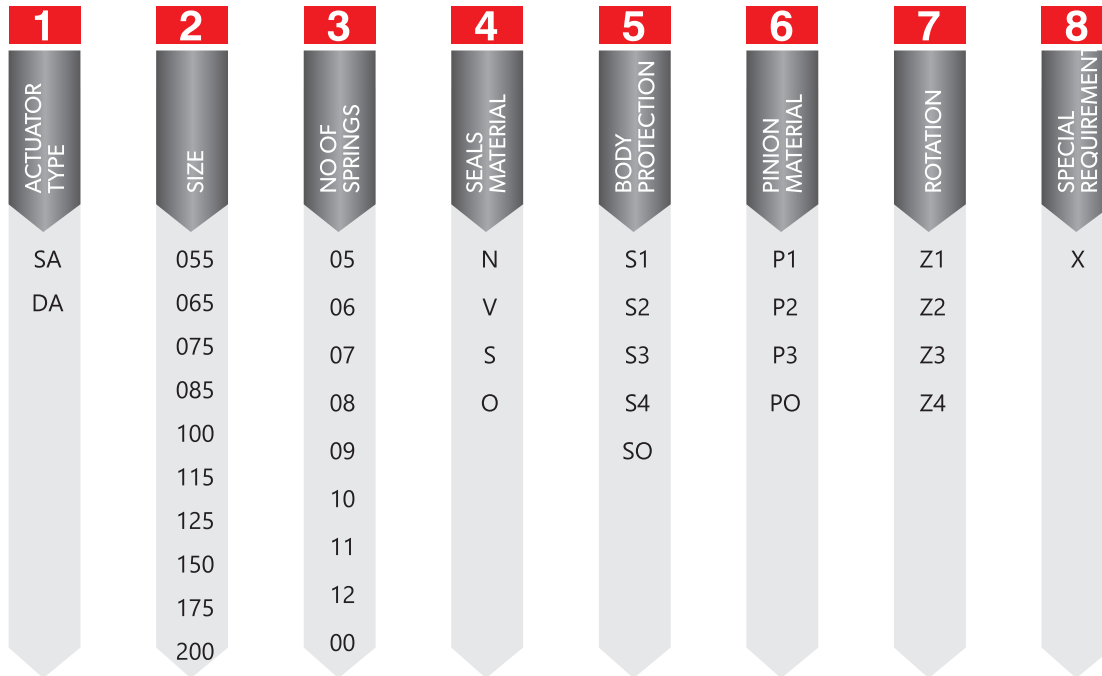
Positioner : For Proportionate control

Air Lock : Air Lock is used to keep Actuator in Stay Put condition in the event of loss of Air to Actuator

Volume Booster : Volume Boost is used for faster response in opening / closing of Actuators



ACTUATOR MODEL SELECTION



<p>1 ACTUATOR TYPE</p> <p>SA - SINGLE ACTING</p> <p>DA - DOUBLE ACTING</p>	<p>2 SIZE</p> <p>055 100 175</p> <p>065 115 200</p> <p>075 125 250</p> <p>085 150</p>	<p>3 NO OF SPRINGS</p> <p>05 09 00</p> <p>06 10</p> <p>07 11</p> <p>08 12</p>	<p>4 SEALS MATERIAL</p> <p>N - NITRILE*</p> <p>V - VITON</p> <p>S - SILICON</p> <p>O - OTHER THAN ABOVE</p>
<p>5 BODY PROTECTION</p> <p>S1 - HARD ANODIZED*</p> <p>S2 - ELECTROLESS NICKLE PLATING</p> <p>S3 - EPOXY COATED</p> <p>S4 - FIBER POWDER COATED</p> <p>SO - OTHER THAN ABOVE</p>	<p>6 PINION MATERIAL</p> <p>P1 - EN 8*</p> <p>P2 - SS304</p> <p>P3 - SS316</p> <p>PO - OTHER THAN ABOVE</p>	<p>7 ROTATION</p> <p>Z1 - 90° CCW* (ANTI CLOCKWISE)</p> <p>Z2 - 90° CW</p> <p>Z3 - 180° CCW</p> <p>Z4 - 360° CW</p>	<p>8 SPECIAL REQUIREMENT</p> <p>X - SPECIAL REQUIREMENT TO BE SPECIFIED</p>

EXAMPLE

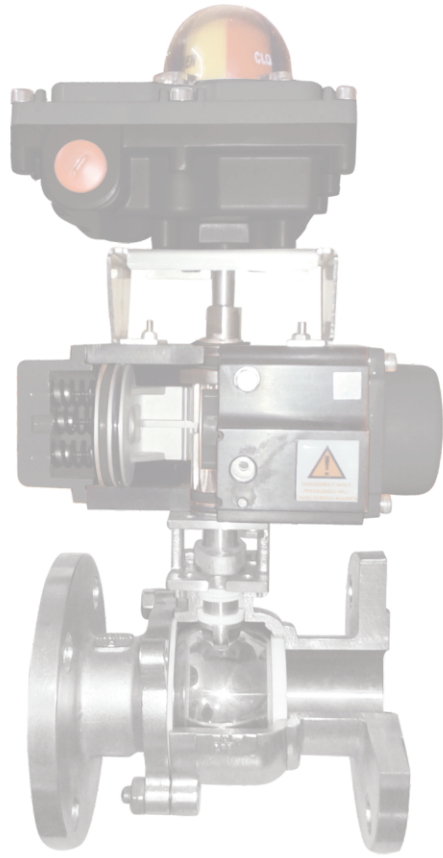
SA
055
05
N
S1
P1
Z1
-

ABOVE STANDS SA - SINGLE ACTING 055 SIZE WITH 5 NOS SPRINGS,

NITRILE SEAL, HARD ANODIZED BODY WITH

PINION MATERIAL EN 8 & BODY ROTATION 90° CCW

Note: Option marked with " * " need not be mentioned while ordering as this being standard supply



Knife Gate Valve
Pneumatic operated



Ball Valve
Pneumatic operated



Butterfly Valve
Pneumatic operated

 **Aryan Enterprises**
Manufactures & Traders of : Industrial Valves & Pneumatic System

M-22, Anand Mangal Industrial Estate, Opp. Ipol Lubricants, Waliv Phata,
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